4263

Dwg. Chy. Nos. 8201-3 & 8152-1

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. ..... Office No. 4263

LOCALITY

State Alaska

General locality West Coast

Locality Prince of Wales Island

1923

CHIEF OF PARTY

T. J. Maher

LIBRARY & ARCHIVES

DATE T. J. Maher

4263

4263

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: Alaska

11—5613

DESCRIPTIVE REPORT.

Hyd. Sheet No. 4263

LOCALITY:

West Coast of Prince of Wales Island

E. I. Capitan Passage, Aneskett Pt. to Shakan Strait ~~Dry Pass~~

1922

CHIEF OF PARTY:

T. J. Maher.

4263

3

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SMOOTH SHEET

of

Northwest part of EL CAPITAN PASS,

S. E. ALASKA.

U.S.S.SURVEYOR - T.J.Maher, Chief of Party.

October 16th to November 25th

1 9 2 2

Descriptive Report

to accompany

Hydrographic Smooth Sheet of Northwest part of El Capitan Pass.

Description of the Shore.

Both shores of El Capitan Pass from the entrance to Shakan Straits to △ Grass are rocky with numerous islands between the entrance to Shakan Straits and the dry section known as Dry Pass. The shores of these small islands are also rocky - being of marble formation with the surface weather-worn.

System of Developement.

The water area on this sheet was developed by a system of lines normal to the shores spaced from 25 meters in the critical depths and narrower portions of the channel to 100 meters in the uniform non-critical sections of the channel. In addition to this, in those portions of the channel where the depth was unusually critical or where the channel itself was very narrow, at least three parallel channel lines were run in order to show the absolute water that could be carried in the channel at any stage of the tide, and as a check on the other system of lines. That section of El Capitan Pass which goes dry and is known as Dry Pass was developed on a 1:2000 scale with a double system of lines; one system of ten meter lines run normal to the shores and another system of lines parallel to the channel. The topography of Dry Pass was itself done on a 1:2000 scale, but the topography of the rest of El Capitan Pass was done on a 1:10000 scale and the hydrography in the field on the same scale, but the smooth sheet has been plotted on a 1:5000 scale.

Discrepancies.

In many places on this sheet the final positions of lines plot within the high water line established by the topography. This is in most cases due to there being no true distinction between the lower high water line and the higher high water line, and since this entire sheet of hydrography was done with whaleboat at the higher tides, soundings were taken beyond the lower high water line, which in many cases was taken by the topographer to be the mean high water line. The position of triangulation points plotted on this sheet were determined by preliminary computations, which in subsequent computations were found in error from about 1 meter in the case of △ Nor and

△Pass to 6 meters in the case of △ Point and △ Grass. As all topography was referred to the erroneously computed triangulation and signals adjusted to these computed points, these triangulation points were plotted on the hydrographic smooth sheet by their preliminary determined positions and all hydrographic signals on the sheet are referred to these positions.

Channel.

The main channel shows a variable depth of water varying from 8 fathoms at the entrance to Shakan Straits to a depth of 6 1/2 feet at lower low water opposite Alligator Rock 98 meters 259° (true) from ⊙ Ed. East of Dry Pass a very critical section of channel is found with a minimum depth of 3 feet at lower low water between ⊙ Cob and ⊙ Ni. The channel at ⊙ Slo is very narrow - the minimum width here being 12 to 13 meters with a depth of from 3 to 5 fathoms. At this point it is necessary to hug the shore close to ⊙ Slo as the rocks abeam ⊙ Slo are very dangerous. Dry Pass bares at lower low water only for a distance of 250 meters - and the channel itself is only 4 to 8 meters in width with a gravel bottom. The center line of this channel bares about 0.7 feet at lower low water. Since the soundings are not entered on the sheet it is difficult to speak intelligently of the depths in various parts of the sheet, nor was it possible to plot the center channel line on the sheet.

Bottom.

That section of El Capitan Pass West of Dry Pass has a rocky bottom with the exception of the basin adjoining, and just West of Dry Pass; the small enclosed basin between, and South of, signals Rock and Leg; and the small basin East of ⊙ Low. Dry Pass itself has a rocky and gravel bottom. East of Dry Pass, the bottom is generally of mud except close to the shores where it is rocky, and that section between signals Cob and Ate, and about the small islet on which ⊙ El is situated, the bottom is also rocky.

Dangers and Rocks.

At the entrance from Shakan Straits, there are a group of rocks which bare at 4 feet of tide (4 feet above M.L.L.W.) on the North side of the channel 182 meters 312° (true) from △ Pass; a rock 192 meters 319° (true) from △ Pass; a rock 191 meters 339° (true) from △ Pass, one foot below M.L.L.W.; and a rock 310 meters 330° (true) from △ Pass. There is a shoal rock area which bares at 8 1/2 feet of tide, shown by sounding lines 135 meters 272° (true) from ⊙ Cris. There is a rock which bares at 7.7 feet of tide 74 meters 213° (true) from ⊙ Cris. A rock which bares at 9 feet of tide is situated 105 meters 149° (true) from ⊙ Rum and bares over an area East and West of about 100

meters at lower low water. A rock which bares at 3 feet of tide lies 143 meters 65° (true) from ⊙ Boat. A rock which bares at 6.3 feet of tide lies 102 meters 164° (true) from ⊙ Bar. A rock which bares at 4 feet of tide lies 228 meters 151° (true) from ⊙ Bar and lies at the foot of the narrow entrance into the small basin South of it. At low water this narrow entrance is clearly visible - a ridge of rock extending from either side of it to the shore. At high water this ridge of rock is covered making this narrow entrance hardly discernible. A rock which bares at 8.3 feet of tide lies 175 meters 84° (true) from ⊙ Cock. A rock which bares at 5.8 feet of tide lies 136 meters 333° (true) from ⊙ Leg. A rock which bares at 10.7 feet of tide lies 153 meters 95° (true) from ⊙ He. A rock called Alligator Rock which is awash at mean high water is very dangerous - many boats having struck here, and lies 98 meters 259° (true) from ⊙ Ed. A rock which bares at 9.8 feet of tide lies 105 meters 113° (true) from ⊙ Pic. A rock which bares at 7.2 feet of tide lies 45 meters 227° (true) from ⊙ Row. A rock which bares at 6.1 feet of tide lies 67 meters 19° (true) from ⊙ Flag. A rock which bares at 3.3 feet of tide lies 36 meters 108° (true) from ⊙ Slo. The end of the same rock which bares at 0.5 feet of tide lies 41 meters 99° (true) from ⊙ Slo. Two rocks both of which bare at 5.5 feet of tide lie 35 1/2 meters 178° (true) and 153° (true) respectively from ⊙ Slo. A reef 30 meters in diameter which bares at 6.2 feet of tide lies 137 meters 204° (true) from ⊙ Own. Positions were taken on these rocks and the distance to the surface of the water or the depth of water on them noted. For obtaining height above mean lower low water, tide readings of the staff at the West end of Dry Pass were used.

Dry Pass.

A very detailed survey of Dry Pass was made - the topography and hydrography being done on a 1:2000 scale. At some time in the past the rocks in the center of Dry Pass - boulders and small rocks - were rolled to either side leaving a narrow channel with a gravel bottom varying from 4 meters to 13 meters in width. Both sides of this narrow channel were located by walking along with a sextant at extreme low tide and obtaining positions along the edges of the channel. The hydrographic survey consisted of two systems of 10 meter lines, one system normal to the channel and the other parallel to the channel. In addition several channel lines were run in the narrow channel itself. From those channel lines it appears that at mean lower low water the center of the narrow channel bares 0.7 feet. But this artificial channel is so narrow, and not being straight, it is quite impossible for any boat to keep the absolute center of the channel. Moreover the stick buoys at present in Dry Pass are often not visible, either being dragged under by the strong current or being too short to show their tops at high water. Buoys B and D are seldom visible, and buoy A was the only one that one could rely on seeing. Moreover as the

boulders taken out of this narrow channel were piled up on either side, the sides of the channel are naturally steep rising to an elevation of 4.5 feet above mean lower low water as shown by the cross section survey. In addition to the hydrographic survey, a survey of the critical portion of Dry Pass was made with plane table and level, and the results are plotted as soundings on the plane table sheet submitted - the soundings in red and the positions in black - the soundings referred to mean lower low water.

Clearing and dredging a satisfactory channel through Dry Pass would appear to be quite practicable. The bottom of the present narrow channel consists of gravel and small rocks - at an extremely low minus tide, where the channel bared conspicuously, an eight foot drill was driven without much effort into the ground along the center line of the present channel for a distance of five feet. This test was made at four different points along the channel. The drill was not driven in further in order that it might be easily pulled up by hand. From these tests it appeared that the first two feet below the surface of the channel was of gravel composition, and below that a mixture of gravel and boulders. On either side of the narrow channel are boulders which could easily be removed. It was not possible to obtain the character of the bottom beneath these boulders.

Currents.

Observations for current was made with current line and pole from a skiff anchored in Dry Pass in mid-channel just opposite ⊙ Dor. Observations were made for 25 consecutive hours, readings being taken at intervals of 15 minutes. It was found that about 3 hours 45 minutes after low water the direction of the current in Dry Pass changes from West to East, and about 3 hours after high water the direction of the current changes from East to West. The tide ebbs and floods both ways from the basin just West of Dry Pass. Immediately after high water, the tide ebbs West and there is a Westerly current in that stretch of water between the basin and the entrance to Shakan Straits, while at the same time the tide ebbs East and there is an Easterly current thru Dry Pass and the stretch of water East of Dry Pass. But three hours after high water the current in Dry Pass and in the area East of Dry Pass changes from East to West, and then we have the ebb taking place entirely in a Westerly direction thru the entire area from East of Dry Pass to Shakan Straits. Similarly immediately after low water we have the flood making into the basin West of Dry Pass from both directions, the current running East from Shakan Straits to the basin and the current running West from the area East of Dry Pass thru Dry Pass to the basin. But about 3 hours 45 minutes after low water the current in Dry Pass and the area East of Dry Pass changes from West to East and then we have the flood taking place entirely in an Easterly direction from Shakan Straits thru Dry Pass and the area East of Dry Pass. The maximum velocity of the current in ~~Dry Pass~~

Dry Pass seems to occur about 30 minutes after high water. The maximum velocity observed for the 25 hours observation was 2.0 knots with an 11 foot range. It was observed that the current did not increase and decrease uniformly, but was very variable at times.

Respectfully submitted,

A. G. Katz.

A. G. Katz,
H. and G. Engineer.

The maximum velocity of the ebb occurs about 2½ hours after low water

Memo., to be attached to the Descriptive Report accompanying the Hydrographic Sheet of Dry Pass, El Capitan Pass, S. E. Alaska.

An inspection of Dry Pass showed that the most satisfactory way of making a survey of that section would be by cross- sectioning it with a level. This could only be done at extreme low waters. These do not always occur at times suitable for such work, and as the ship was engaged on other work it was not always in the locality of the Pass when this work could be done. Toward the end of the season two tides occurred at times which permitted some work to be done. The weather was extremely bad. In the time available it was not practical to cross section the area in a systematic manner. The level rod was set up on points which were bare and on places where a whaleboat grounded and on sections of the bottom which were visible from the boat. The elevations determined are, in most instances, those of points slightly higher that the height of the surrounding area, points which would most likely be missed by the leadsman when sounding. The lead gives a better general average of depths; the level gives points of greater height; there are instances where this is not so, but in such cases the extended level rod was held on the bottom for the purpose of determining channel lines.

The record of this work will be found in two volumes of sounding records on the labels of which suitable notations regarding their contents have been made. Weather conditions prevented these records from being kept in good shape in the field. The necessity for resuming field work before the office work of the 1922 season has been completed, and orders to turn all records in, prevent further office work on these records.

Attention is called to the memo inserted in the front part of each of the above mentioned volumes.

L. Johnson

U. S. S. SURVEYOR, El Capitan Pass - 1922.

Memo to accompany Records of Hydrographic work in Dry Pass

An automatic gauge was maintained at Shakan. A tide staff was maintained in El Capitan Pass, just west of Dry Pass. In the sounding records it is noted as # 1. It was installed for the purpose of determining a plane for the reduction of soundings in Dry Pass and for points in El Capitan Pass, west of this staff but close to it. Attention is called to the fact that the watch used was found to be 16 minutes fast of 135 M. T., at noon, Nov., 4th. The rate of this watch appeared to be uniform. It was set to correct time and its adjusting mechanism changed. Mr. Senior tabulated the tide rolls and also attended to the tabulation of hourly ordinates at the base and subsidiary stations. Notations were made on these records which have been forwarded to the office.

In the bight on the north shore, between El Capitan and the Dry Pass, East of Dry Pass, another staff, noted in the records as staff # 2, was maintained for the purpose of determining a plane for the reduction of soundings taken east of Dry Pass. This staff is also referred to the gauge at Shakan.

During ordinary tides, staff # 2 may be referred to the gauge at Shakan but at lower lows, the flow of water from the vicinity of the gauge is restricted by Dry Pass and the direct connection by water is by way of Sea Otter Sound, Warren Channel and Shakan Straits. The flow of water at the south end of El Capitan Pass is obstructed by numerous islands. If I had another gauge it would have been established at the south end of El Capitan Pass, for the purpose of determining whether the relations obtained between the Shakan gauge and staff # 2 held good for all tides.

Attention is called to this matter so that it may be given consideration. If the office thinks it desirable, a staff or gauge will be maintained at the southern end of El Capitan Pass, to which staffs maintained within the Pass will be referred.

Soundings at the south end of the Pass are referred to the staff established by the party on the Wildcat, near the vicinity of Devilfish Bay. This staff is noted as # 3, in the records. It is also referred to the Shakan gauge.

Statistics Sheet No. 6 - North end of El Capitan Pass, S.E.Alaska.

Date 1922	Letter	Volume	Positions	Soundings	Miles statute	Vessel
Oct.18	a	1	121	511	8.7	Whaleboat
Oct.19	b	1	25	73	1.9	"
Oct.20	c	1-2	29	130	2.4	"
Oct.21	d	2	18	57	1.2	"
Oct.25	e	2	73	253	5.3	"
Oct.26	f	2-3	122	507	6.9	"
Oct.27	g	3-4	161	673	5.4	"
Oct.28	h	4	86	359	4.8	"
Oct.30	j	4-5	102	413	6.9	"
Oct.31	k	5	14	58	0.9	"
Nov. 1	l	5-6	176	626	6.6	"
Nov. 2	m	6	68	254	2.6	"
Nov. 3	n	6-7	138	525	9.2	"
Nov. 4	p	7	80	327	5.3	"
Nov. 6	q	7	6	17	0.4	"
Nov. 7	r	8	156	523	8.8	"
Nov. 8	s	8	137	603	5.9	"
Nov. 9	t	9	41	183	2.7	"
Nov.10	u	9	117	455	7.7	"
Nov.11	v	9-10	38	164	2.6	"
Nov.13	w	10	111	473	7.4	"
Nov.14	x	10	62	247	5.8	"
Nov.16	y	11	36	125	2.4	"
Nov.17	z	11	102	341	6.6	"
Nov.18	aa	11	17	56	1.1	"
	Total.		2036	7953	119.5	

Hydrographic Sheet No. 4263.
El Capitan Passage - Alaska.

The work covered by this sheet develops that portion of El Capitan Passage from Aneskett Point to Shakan Pass.

This area is well covered and appears to be a satisfactory development. No additional work is necessary.

The sheet was protracted by the field party and found approximitely accurate. The position numbers and letters appear only at begining of lines and the connecting lines appear to have been made by a stylus instead of pencil. This has indented the paper and in places cut it.

The paper is of poor quality and the sheet much to large.

Records are generally good and easily followed

John O. Torrey Sr
4/22/24

April 21, 1924.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
2 volumes of ~~soundings~~ level records for

HYDROGRAPHIC SHEET 4263

Locality: Dry Pass, S.E.Alaska.

Chief of Party: T.J.Maher in 1922
Plane of reference is mean lower low water reading
4.4 ft. on tide staff ~~at~~ No. 1 - West of Dry Pass

For reduction of soundings, condition of records satisfactory
except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered wrong column.
7. Field reductions entered in "Office"column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tubeused not stated.
11. Sounding tube No. entered in column of"Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks

Chief, Division of Tides and Currents.

ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND REFER TO No. 4-DRM

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

May 2, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4263

El Capitan Passage, Aneskett Pt. to Shakan Strait, Alaska.

Surveyed in 1922

Instructions dated February 15, 1923

Chief of Party, T. J. Maher.

Surveyed by A. G. Katz.

Protracted by A. G. Katz.

Soundings plotted by H. R. Edmonston and F. M. Albert.

Verified and inked by J. D. Torrey.

1. The records conform to the requirements of the General Instructions, the descriptive report being unusually comprehensive.

2. The plan and character of development are very complete and conform to the requirements of the General Instructions.

3. The plan and extent of development satisfy the specific instructions.

4. The sounding line crossings are adequate.

5. The information is sufficient for drawing the usual depth curves.

6. The protracting only was done by the field party. It was accurate but the position numbers and letters were placed only at the ends of the lines. The positions, instead of being connected by pencil lines, were connected with a stylus by heavily scored lines which made inking difficult and cut the paper in places.

7. The junctions with adjacent sheets are satisfactory.

8. The paper used appears to be of poor quality. The sheet is 9 feet long - much too large. It could have been divided at Dry Pass without sacrificing any desirable feature.

9. No further leadline surveying is required but the area should be dragged when opportunity offers.

10. The character and scope of the surveying are excellent and the field drafting good.

11. Reviewed by E. P. Ellis, April, 1924.

* Points connected by pencil lines. Paper such an inferior quality that it was entirely unsuitable for this class of work, <u>but</u> it was the only kind of paper which could be obtained.

J. Baker

Form 537
11—5812

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. 4263

State . . . ALASKA

General locality . West Coast of Prince of Wales Island ~~S. E. ALASKA~~ . . . . . .

Locality . . . . . EL CAPITAN PASSage, Ancketl Pt to Dry Pass.

Chief of party . . T. J. MAHER . . . . . .

Surveyed by . . . A. G. KATZ . . . . . .

Date of survey . . October 16th to November 25th, 1922.

Scale . . . . . 1:5000 & 1:2000 . . . . . .

Soundings in . . . . . -- . . . . . .

Plane of reference Mean Lower Low Water . . . . . .

Protracted by A.G.KATZ. . Soundings in pencil by H.R Edmonston-F.M Albert

Inked by J. D. Torrey . . Verified by J. D. Torrey . . .

Records accompanying sheet (check those forwarded):

Des. ~~Report~~ XX, 2 Tide books, ... Marigrams, 4 Boat sheets,

11 Sounding books, ... Wire-drag books, ... Photographs.

Data from other sources affecting sheet Plane table sub-sheet of level cross-sectioning.

Remarks:

Form 537
11—3812

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. (6) 4263 (Boat Sheet)

State Alaska. West Coast of Prince of Wales Island

General locality ~~S. E. Alaska.~~

Locality Dry Pass

Chief of party Thos. J. Maher

Surveyed by A. G. Katz.

Date of survey October 23, October 24, 1922.

Scale 1:2000

Soundings in Feet.

Plane of reference Mean lower low water.

Protracted by A. G. K. Soundings in pencil by A. G. K.

Inked by A. G. K. Verified by

Records accompanying sheet (check those forwarded):

Des. report/ with main hydrographic sheet.

2 books/ containing level notes and sextant angles.

Data from other sources affecting sheet

Remarks: This sheet covers the survey of the critical portion of Dry Pass, the survey being made with plane table and wye level. The soundings are entered in red, the positions in black, on this sheet.

Sub sheet of plane table and leveling cross-sectioning.